

### IN THE CLAIMS

Please amend the claims as follows.

1-2. (Canceled)

3. (Previously Presented) A processor comprising:
- a first memory configured to store a sequence of instructions representing essential code;
  - a second memory configured to store sequences of instructions representing non-essential code;
  - a conjugate mapping table configured with a plurality of triggers to specify respectively different sequences of the non-essential code to be executed from the second memory; and
  - a single microarchitecture structure configured to execute instructions both from the essential code and from the non-essential code, the processor being coupled to both the first and second memories to process code from the first memory, and to process code from the second memory in response to the triggers,
- wherein the first memory is coupled to a first instruction cache configured to cache instructions that determine the logical correctness of a program,
- wherein the second memory is coupled to a second instruction cache configured to cache instructions that provide hints for the execution of the instructions that determine the logical correctness of the program.

4. (Currently Amended) The processor of claim [[1]] 3 wherein the first memory is coupled to registers that store a microarchitectural state, and wherein the conjugate mapping table is responsive to the microarchitectural state.

5. (Currently Amended) The processor of claim 4 ~~further comprising:~~  
~~a first instruction cache coupled to the first memory;~~  
[[a]] wherein the second instruction cache is coupled between the conjugate mapping table and the second memory.

6. (Canceled)

7. (Currently Amended) The processor of claim [[1]] 3 wherein the conjugate mapping table comprises a plurality of records, each of the plurality of records being configured to map a trigger to a non-essential code sequence.

8. (Original) The processor of claim 7 wherein the trigger comprises an atomic value, such that the conjugate mapping table is configured to specify the non-essential code sequence when the atomic value is satisfied.

9. (Original) The processor of claim 7 wherein the trigger comprises a vector value, such that the conjugate mapping table is configured to specify the non-essential code sequence when the vector value is satisfied.

10 (Canceled)

11. (Currently Amended) The processor of claim [[1]] 3 wherein the microarchitectural structure includes a register bank.

12-30. (Canceled)

31. (Currently Amended) The processor of claim [[1]] 3 further comprising a dynamic code analyzer to generate non-essential code from the essential code in the first memory.

32. (Currently Amended) The processor of claim [[1]] 3 further comprising a dynamic code analyzer directed acyclic graph trace representations of at least some of the essential code from the first memory.

33. (Canceled)

34. (Currently Amended) The method of claim ~~[[33]]~~ 61 wherein the first and second memories are a first and second pipelines.

35. (Currently Amended) The method of claim ~~[[33]]~~ 61 wherein the first and second memories are caches.

36. (Previously Presented) The method of claim 35 wherein the first and second memories are logically separate.

37. (Previously Presented) The method of claim 35 wherein the first and second memories are physically separate.

38. (Previously Presented) A method comprising:  
loading a first stream of instructions containing essential code into a first memory;  
loading a second stream of instructions containing non-essential code into a separate second memory;  
storing a mapping table relating a plurality of triggers to respective ones of a plurality of different sequences of the non-essential code;  
executing instructions from the essential code from the first memory in a microarchitecture structure until detecting an occurrence one of the triggers;  
thereafter, executing instructions from one of the non-essential code sequences in the same microarchitecture structure, the one sequence being specified by the one trigger,  
wherein the non-essential code includes hint code generated by a compiler from the essential code.

39. (Currently Amended) The method of claim ~~[[33]]~~ 38 wherein the non-essential code includes sequences to perform instruction set virtualization.

40. (Previously Presented) The method of claim 39 wherein the included sequences perform respectively multiple ones of the functions.

41. (Currently Amended) The method of claim ~~[[33]]~~ 38 wherein certain of the essential code is stored in the second memory.

42. (Previously Presented) The method of claim 41 wherein the certain essential code includes sequences for virtualization.

43. (Previously Presented) The method of claim 42 wherein at least one of the sequences virtualizes individual instructions.

44. (Currently Amended) The method of claim ~~[[33]]~~ 38 where the triggers are instruction attributes.

45. (Previously Presented) The method of claim 44 where the instructions attributes include opcodes, locations, and/or operands.

46. (Previously Presented) The method of claim 65 wherein the data attributes include values and/or locations.

47. (Previously Presented) The method of claim 66 wherein the state attributes include architectural and/or microarchitectural states.

48. (Previously Presented) The method of claim 67 wherein the event attributes include interrupts, exceptions, and/or processor state register values.

49-54. (Canceled)

55. (Currently Amended) The system of claim [[1]] 3 where the single microarchitecture structure is configured to execute all instructions from both the essential and the non-essential code.
56. (Currently Amended) The system of claim [[1]] 3 where the second memory further contains some code that is not non-essential.
57. (Currently Amended) The method of claim [[33]] 38 wherein the non-essential code includes sequences to perform interrupt or exception processing.
58. (Currently Amended) The method of claim [[33]] 38 wherein the non-essential code includes sequences to perform speculative execution.
59. (Currently Amended) The method of claim [[33]] 38 wherein the non-essential code includes sequences to perform security checking or sandboxing.
60. (Currently Amended) The method of claim [[33]] 38 wherein the non-essential code includes sequences to test the microarchitecture.
61. (Previously Presented) A method comprising:
- loading a first stream of instructions containing essential code into a first memory;
  - loading a second stream of instructions containing non-essential code into a separate second memory;
  - storing a mapping table relating a plurality of triggers to respective ones of a plurality of different sequences of the non-essential code;
  - executing instructions from the essential code from the first memory in a microarchitecture structure until detecting an occurrence one of the triggers;
  - thereafter, executing instructions from one of the non-essential code sequences in the same microarchitecture structure, the one sequence being specified by the one trigger,

wherein the non-essential code includes sequences to prefetch essential code into the first memory.

62. (Previously Presented) The method of claim 42 wherein at least one of the sequences virtualizes blocks of instructions.

63. (Previously Presented) The method of claim 42 wherein at least one of the sequences virtualizes sets of registers,.

64. (Previously Presented) The method of claim 42 wherein at least one of the sequences virtualizes processor hardware resources.

65. (Currently Amended) The method of claim ~~[[33]]~~ 38 where the triggers are data attributes.

66. (Currently Amended) The method of claim ~~[[33]]~~ 38 where the triggers are state attributes.

67. (Currently Amended) The method of claim ~~[[33]]~~ 38 where the triggers are event attributes..